

North Carolina 2018 - R402.1.5 Total UA



SOUTHERN ENERGY
MANAGEMENT
ENERGY EFFICIENCY & SOLAR POWER

Property
, NC 27546
Model: Vantage

Organization
Southern Energy Manager
Sara Caliendo

Inspection Status
Results are projected

Vantage plan crawl
Template - H & H Homes - Fayettevil

Builder
H&H Homes

Building UA

Elements	NC Reference	As Designed
Ceilings	45.6	40.8
Above-Grade Walls	106.7	89.8
Windows, Doors and Skylights	82.0	76.3
Slab Floor:	87.3	114.0
Framed Floors	0.0	0.0
Foundation Walls	0.0	0.0
Rim Joists	0.0	0.0
Overall UA (Design must be equal or lower):	321.6	320.9

Requirements

✓	402.1.5	Total UA alternative for insulation and fenestration
✓	402.3.2 Glazed Fenestration SHGC	Average SHGC: 0.27; Max SHGC: 0.30
✓	R402.4.2.2	Air Leakage Testing <small>Air sealing is 0.23 CFM50 / ft² Shell Area. It must not exceed 0.30 CFM50 / ft² Shell Area.</small>
✓	R402.5	Area-weighted average fenestration SHGC
✓	R402.5	Area-weighted average fenestration U-Factor
✓	R404.1	Lighting Equipment Efficiency
✓	Mandatory Checklist	Mandatory code requirements that are not checked by Ekotrope must be met.
✓	R403.3	Duct Insulation
✓	403.3.3	Duct Testing

Design exceeds requirements for North Carolina 2018 Prescriptive compliance by 0.2%.

Name: Sara Caliendo
Organization: Southern Energy Management

Signature: Sara Caliendo
Digitally signed: 10/1/19 at 3:12 PM

Ekotrope RATER - Version 3.1.0.2265

North Carolina 2018 Prescriptive compliance results calculated using Ekotrope RATER's energy and code compliance algorithm, including appropriate amendments. Ekotrope RATER is a RESNET Accredited HERS Rating Tool. All results are based on data entered by Ekotrope users. Ekotrope disclaims all liability for the information shown on this report.

Fuel Summary



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Annual Energy Cost

Electric	\$1,426
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Annual End-Use Cost

Heating	\$409
Cooling	\$143
Water Heating	\$201
Lights & Appliances	\$505
Onsite Generation	-\$0
Service Charges	\$168
Total	\$1,426

Annual End-Use Consumption

Heating [Electric kWh]	3,936.6
Cooling [Electric kWh]	1,335.8
Hot Water [Electric kWh]	1,908.4
Lights & Appliances [Electric kWh]	4,790.2
Total [Electric kWh]	11,971.0
Total Onsite Generation kWh	0.0

Peak Electric Consumption

Peak Winter kW	2.88
Peak Summer kW	1.77

Utility Rates

Electricity	Duke-Progress 2019
Natural Gas	PSNC - Dominion 2019

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General Building Information

Number Of Bedrooms	2
Number Of Floors	1
Conditioned Floor Area [sq. ft.]	1,519
Unconditioned, attached garage?	No
Conditioned Volume [cu. ft.]	13,671
Total Units in Building	1
Residence Type	Single family detached
Floor Number	-
Model	Vantage
Community	
Climate Zone	4A

Foundation Wall

None Present

Foundation Wall Library List

None Present

Slab

Name	Library Type	Perimeter	Floor Grade	Carpet R	Exposed Masonry Area	Surface Area	Location	Enclosing
slab	Uninsulated	180	On Grade	1	0	1,519.0 ft²	Exposed Exterior	Conditioned Space

Slab Library List

Name	Wall Construction Type	Slab Completely Insulated?	Underslab Insulation Width [ft]	Perimeter Insulation Depth [ft]	Perimeter Insulation R Value	Thermal Break	Effective R-value
Uninsulated	Wood Frame / Other	No	0	0	0	No	0.00

Framed Floor

None Present

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Framed Floor Library List

None Present

Rim Joist

None Present

Rim Joist Library List

None Present

Wall

Name	Library Type	Surface Color	Surface Area	Location
1st floor ambient	R 19 Adv. Framing G3 16" O.C	Medium	1,404.0 ft ²	Exposed Exterior
1st floor garage	R 19 Adv. Framing G3 16" O.C	Medium	216.0 ft ²	Unconditioned, attached garage

Wall Library List

Name	Effective R-value
R 19 Adv. Framing G3 16" O.C	15.433

Glazing

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Overhang Depth	Overhang Ft To Top	Overhang Ft To Bottom	Orientation	Surface Area
front unshaded	35/27	1st floor ambient		0	0	0	West	30.0 ft ²
left unshaded	35/27	1st floor ambient		0	0	0	North	36.0 ft ²
rear unshaded	35/27	1st floor ambient		0	0	0	East	85.2 ft ²
right unshaded	35/27	1st floor ambient		0	0	0	South	45.0 ft ²

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Glazing Library List

Name	Shgc	U-factor
35/27	0.27	0.350

Skylight

None Present

Skylight Library List

None Present

Opaque Door

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Emittance	Solar Absorptance	Surface Color	Surface Area	Location
front door	Fiberglass R-5	1st floor ambient		0.9	0.75	Medium	20.0 ft ²	Exposed Exterior
garage door	Fiberglass R-5	1st floor garage		0.9	0.75	Medium	18.0 ft ²	Exposed Exterior

Opaque Door Library List

Name	Effective U-factor
Fiberglass R-5	0.200

Roof Insulation

Name	Library Type	Attic Exterior Area [s.f.]	Clay or Concrete Roof Tiles	Surface Color	Surface Area	Location
Attic	R-38 Attic BLOWN FG G1 2x10 24"OC w/ Radiant Barrier	1,519	No	Dark	1,519.0 ft ²	Attic

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Roof Insulation Library List

Name	Has Radiant Barrier	Effective R-value
R-38 Attic BLOWN FG G1 2x10 24"OC w/ Radiant Barrier	Yes	37.246

Whole House Infiltration

Infiltration	Measurement Type	Shelter Class
1093 CFM at 50 Pa	Blower-door tested	4

Mechanical Ventilation

None Present

Lighting

% Interior Fluorescent Lighting	% Interior LED Lighting	% Exterior Fluorescent Lighting	% Exterior LED Lighting	% Garage Fluorescent Lighting	% Garage LED Lighting
75	0	0	0	0	0

Onsite Generation

None Present

Onsite Generation Library List

None Present

Solar Generation

None Present

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Solar Generation Library List

None Present

Conditioning Equipment

Name	Library Type	Heating Percent Load	Cooling Percent Load	Hot Water Percent Load	Location
Water Heating	Z 50 gal. 0.91EF elec	0%	0%	100%	Unspecified
whole house heat pump	z 24k 14 seer 8.0 hspf	100%	100%	0%	Unspecified

Equipment Type: Z 50 gal. 0.91EF elec

Fuel Type	Electric
Distribution Type	Hydronic Delivery
Hot Water Efficiency	0.91 Energy Factor
Tank Capacity (gal.)	50
Hot Water Capacity [kBtu/h]	40
Recovery Efficiency	0.98

Equipment Type: z 24k 14 seer 8.0 hspf

Fuel Type	Electric
Distribution Type	Forced Air
Motor Type	PSC (Single Speed)
Heating Efficiency	8 HSPF
Heating Capacity [kBtu/h]	24
Cooling Efficiency	14 SEER
Cooling Capacity [kBtu/h]	24

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Distribution System

Distribution Type	Forced Air
Heating Equipment	whole house heat pump
Cooling Equipment	whole house heat pump
Sq. Feet Served	1519
# Return Grilles	2
Supply Duct R Value	8
Return Duct R Value	8
Supply Duct Area [ft ²]	410.13
Return Duct Area [ft ²]	151.9
Leakage to Outdoors	60 CFM25 (3.95 / 100 s.f.)
Total Leakage	60 CFM25
Total Leakage Duct Test Conditions	Post-Construction
Use Default Flow Rate	Yes
Duct 1	
Duct Location	Attic (well vented, radiant barrier)
Percent Supply Area	100
Percent Return Area	100
Duct 2	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0
Duct 3	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0
Duct 4	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0
Duct 5	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0
Duct 6	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0

Ceiling Fan

Has Ceiling Fan	Yes
Cfm Per Watt	100

Water Distribution

Water Fixture Type	Standard
Use Default Hot Water Pipe Length	No
Hot Water Pipe Length [ft]	64
At Least R3 Pipe Insulation?	No
Hot Water Recirculation System?	No
Recirculation System Pipe Loop Length [ft]	10
Drain Water Heat Recovery?	No

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Clothes Dryer

Fuel Type	Electric
Cef	2.617
Field Utilization	Timer Controls

Clothes Washer

Label Energy Rating	151 kWh/Year
Electric Rate	\$0.11/kWh
Annual Gas Cost	\$12.00
Gas Rate	\$1.22/Therm
Capacity	3.31
Imef	2.155

Appliances and Controls

Programmable thermostat?	Yes
Dishwasher Size	Standard
Dishwasher Efficiency	0.65 EF
Range/Oven Fuel	Electric
Convection Oven?	No
Induction Range?	No
Refrigerator Consumption	700 kWh/Year

Notes

- updated JS 01/31/18
- insulated slab modeled
- wall insulation modeled to Grade 3
- confirm attic insulation and hvac specs
- ventilation modeled as none
- confirm cfl lighting %
- modeled to worst case orientation